

10.0 BUILDING 3102: BEAVER CREEK FIRE HALL

10.1 Description of Existing Water Supply System

Building 3102, the Beaver Creek Fire Hall, is currently served by a water supply system that delivers water from a 34.0 m deep well. In addition to serving the fire hall, the well also serves the Beaver Creek Public Library, which is located within the same building. The wellhead is located in the main garage of the fire hall and was not equipped with a proper cap at the time of the assessment (there was only a cloth placed over the top of the casing). The well location and other details about the surrounding area are provided in Figure 3102-A in Appendix A10. The coordinates of the wellhead, as measured by a handheld GPS device, were recorded as:

- UTM ZONE 7
- Northing: 6916938
- Easting: 506369

There is no treatment or disinfection system for this system. Water is delivered to an approximately 12 000 L water storage tank which is at grade, and a 4800 L elevated water storage tank for fire protection. A schematic detailing the well supply system is provided as Figure 3102-B in Appendix A10.

10.2 Description of Existing Wastewater Systems

There is a septic tank or a leach pit located to the west of the fire hall approximately 16 m from the well. It is unknown if there is an effluent discharge field present on the property. Conceptual hydrogeology (outlined in a following section) indicates that the septic system is likely upgradient from the well. A site plan showing the septic system is given by Figure 3102-A in Appendix A10.

10.3 Water Quality Results

10.3.1 Water Quality Results from Previous Sampling

Bacteriological

Eight samples were collected from the Beaver Creek Fire Hall water system between September 2004 and June 2005 and were tested for total coliform and *E. coli* by Yukon Environmental Health Services using the presence/absence test method. Results are

tabulated in Table 3102-1 in Appendix A10. Coliform bacteria and *E. coli* were reported as absent in each of the eight samples for which results are provided.

Potability

Water samples were previously collected from the Beaver Creek Fire Hall water system on September 28, 2004 and June 15, 2005. The samples were submitted to Northwest Labs in Surrey, BC and ALS Environmental in Vancouver, BC for potability analyses. The results of these analyses are summarized in Table 3102-2 in Appendix A10. EBA reviewed the analytical results to compare them with the Canadian Drinking Water Quality Guidelines (CDWQG) to observe general water quality, identify and recommend additional sampling and analytical, and to identify indicators of potential contamination as follows:

- The turbidity during the first sampling event was 2.3 NTU, and during the second sampling event to be 2.57 NTU, both of which are above the CDWQG MAC of 1.0 NTU;
- The water quality results indicated that all other health based and aesthetic objectives were met for the parameters analyzed;
- Although the copper concentration was not in exceedence of the CDWQG MAC, copper was elevated with respect to regional groundwater quality for the Beaver Creek area;
- Although the lead concentration was not in exceedence of the CDWQG MAC, lead was elevated with respect to regional groundwater quality for the Beaver Creek area;
- The water quality results indicated that the groundwater from which this system receives its water supply is a calcium bicarbonate type water; and,
- The hardness (as CaCO₃) was 198 mg/L during the first sampling event, and is considered very hard. During the second sampling event the hardness (as CaCO₃) was 170 mg/L, and is also considered very hard.

10.3.2 Identification of Additional Analytical Testing Required

Additional analytical for the Beaver Creek Fire Hall maintenance building that was identified to be included during the water system assessments is detailed below:

- As the turbidity had previously indicated a CDWQG MAC exceedence, a sample was taken to re-test for turbidity;
- UV absorbance and UV transmissivity, as well as tannins and lignin, to determine potential for UV treatment as a disinfection option for this water system;
- Total organic carbon (TOC);

- Extractable Petroleum Hydrocarbons (EPH) to determine if there are any indications of hydrocarbon contamination; and,
- Measurements in the field for total dissolved solids, conductivity, pH, and temperature.

Additional Analytical Results

A water sample was obtained during the water system assessment on July 28, 2005, and was submitted to ALS Environmental in Vancouver, BC for analysis. These results are summarized in Table 3102-2 in Appendix A10 and the laboratory reports are included in Appendix B.

- At 2.69 NTU, the turbidity was reportedly in exceedence of the CDWQG MAC of 1.0 NTU;
- The screening for EPH did not indicate any parameter above detection limits; and,
- The water quality results from additional analytical sampling indicated that all other health based and aesthetic objectives were met for the parameters analyzed.

10.3.3 Indicators of Potential Contamination

Chloride, nitrate and nitrite concentrations can indicate impacts from surfacewater sources or septic waste. Chloride concentrations were reported to be relatively low, however, may be elevated above normal background ranges for groundwater in the Beaver Creek area. Nitrate and nitrite concentrations, however, for this sample were low and within the normal background range for this area. These water quality results alone are inconclusive regarding whether the aquifer from which the groundwater is obtained for the Beaver Creek Fire Hall is under the influence of surfacewater sources or septic wastes. Road salting on the highway adjacent to the well could result in elevated chloride concentrations.

10.4 Conceptual Hydrogeology

There was no driller's log available for review. Most of the wells in the Beaver Creek area indicate coarse sand and gravel with cobbles and small boulders to depths of at least 30 m. The well logs also indicate that discontinuous lenses of finer-grained sediments persist throughout the area, but in general the sediments are dominated by coarse alluvium. Some discontinuous permafrost is also interpreted to persist throughout the Beaver Creek area. The variability of sediments in the Beaver Creek area indicates limited aquifer protection

from surficial sources of contamination. A study previously completed in the Beaver Creek area by EBA determined that the direction of groundwater flow in the vicinity of the site is north to northeasterly.

10.5 Potential Contaminant Sources

Potential contaminant sources identified during the water system assessment are compiled in field notes in Appendix A10. Photos of potential contaminant sources are also provided in Appendix A10. Potential sources of contamination within 30 m of the wellhead are:

- A above ground fuel storage tank (AST) located at 3.5 m;
- A septic tank or leach pit at 16 m; and,
- Fuel and chemical handling and vehicle parking within very close proximity to the wellhead.

In addition a neighbouring septic field is located 47 m away from the wellhead, and an outhouse is located 34 m away.

10.5.1 Spills Records and Contaminated Sites Search Results

The Government of Yukon Environmental Programs Branch and Environment Canada Environmental Protection Branch did not identify any recorded spill events or contaminated sites issues for this site or neighbouring sites.

10.6 Identified Water System Deficiencies and Associated Risk

10.6.1 High and Medium Risk Deficiencies

- Poor surface completion of the well (located in fire hall garage only 40 mm above grade, there is no cap on the casing);
- There is no surface sanitary seal (grout or bentonite seal as required by the Canadian Groundwater Association's Guidelines for Water Well Construction);
- There is no well log available to review well construction or lithology;
- By definition of the Draft Yukon GUDI Assessment Guideline, the well is potentially under the direct influence of surface water because the depth of the well is unknown and the well construction does not meet the requirements of the Guidelines for Water Well Construction;
- Well is located within 30 m of potential contaminant sources, including an AST at 3.5 m, a leach pit located at approximately 16 m, and garage activities immediately adjacent to the wellhead;

- Turbidity has exceeded the CDWQG MAC in each water quality analysis for which results are provided;
- The pressure tanks are constructed of galvanized steel and do not meet present standards;
- The plumbing configuration does not meet standards and appeared to be aging and in a state of disrepair;
- There is no treatment or disinfection system; and
- There is no backflow prevention between the elevated fire protection tank and the domestic system.

10.6.2 Low Risk Deficiencies

- Although the copper concentration was not in exceedence of the CDWQG MAC, copper was elevated with respect to general groundwater quality for the Beaver Creek area;
- Although the lead concentration was not in exceedence of the CDWQG MAC, lead was elevated with respect to general groundwater quality for the Beaver Creek area; and,
- It is unlikely that the supports for the elevated water storage tank are earthquake or collision proof.

10.7 Mitigative Options for Deficiencies

Mitigative options were developed to address the deficiencies identified in the previous section. Deficiencies are categorized by recommended level of priority (with Priority 1 being most critical).

10.7.1 Priority 1

The following recommendations are provided in order to mitigate deficiencies that are of immediate concern for the Fire Hall and Library water supply system. Priority 1 remedial recommendations include:

- The casing should be extended to at least 500 mm above the concrete floor grade, and if not already completed, a proper fitting well cap must be installed;
- The plumbing system should be re-plumbed such that the domestic water comes of the system prior to entering the tank;
- Backflow prevention should be installed to prevent backflow from the water tanks to the domestic system;

- The well and water system should be superchlorinated; and
- Disinfection treatment such as an NSF/ANSI 55 certified UV system should be installed. This is a conceptual design recommendations based on the information available for planning and budgeting purposes. Engineering input will be required for final system specifications.

10.7.2 Priority 2

Priority 2 upgrade options to mitigate long-term risk and meet the proposed regulation are presented below:

Option 1: New Well Construction

- For this option, it is recommended that a new well should be drilled and the current well be decommissioned. It is recommended that a new well be installed to meet the following conditions:
 - The well should be equipped with a surface seal to at least 6 m and the casing should be extended above grade (500 mm) within a lockable enclosure that is inaccessible to animals and unauthorized personnel;
 - The well must be located at a distance greater than 30 m from any potential source of contamination, including the above ground storage tank and all parts of the septic system;
 - The water from the new well must meet all CDWQG health based guidelines. If there are any exceedences in the CDWQG health-based guidelines then a treatment system must be designed and installed as necessary. A disinfection system may be recommended.

Option 2: New Cluster Well Construction

- Option 2 presents the option of a cluster well installation to provide water supply to the Grader Station, Health Centre, Visitor Reception Centre and Fire Hall. The advantages would include combined savings on capital costs, reduced life cycle costs, added control and system security, and reduced maintenance requirements. For this option, it is assumed that a heated building enclosure would be constructed to house the well and treatment system.

10.7.3 Priority 3

- Ongoing monitoring of copper and lead concentrations.

10.8 Cost Estimates for Mitigative Options

Engineering costs for mitigative options are estimated to be 20% of construction costs, and would include inspection and completion reporting. The costs for materials and labour (not including engineering) are provided in the sections below. An additional contingency allowance of 20% is suggested for budgetary purposes.

10.8.1 Priority 1

The estimated costs for the recommended Priority 1 upgrades are detailed below:

- Casing extension and well cap installation - **\$600**;
- Re-plumb so that domestic comes off of piping prior to tank, and install double check valve for backflow protection - **\$500**;
- Well and water system superchlorination - **\$200**; and
- UV system installation with required pre-filtration - **\$2,400**.

The estimate total cost for Priority 1 recommended upgrade is estimated at **\$3,700** including materials and labour.

10.8.2 Priority 2

Option 1: New Well Construction

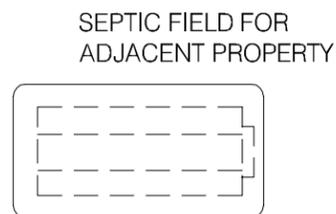
- The estimated cost for the Option 1 which includes the construction of a new well to serve the Fire Hall and Library building is approximately **\$30,000** for drilling, testing and hook-up, assuming that the well would be approximately 30 m deep and constructed as described above.

Option 2: New Cluster Well Construction

- The estimated cost for Option 2, consisting of a cluster well installation to provide water supply from a central well to the Grader Station, Health Centre, Visitor Reception Centre and Fire Hall would be in the order of **\$25,000** per system. This estimated capital cost includes supplies and labour for well construction, testing, treatment and distribution piping.

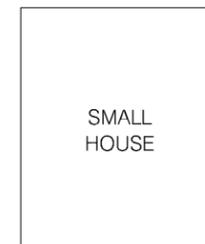
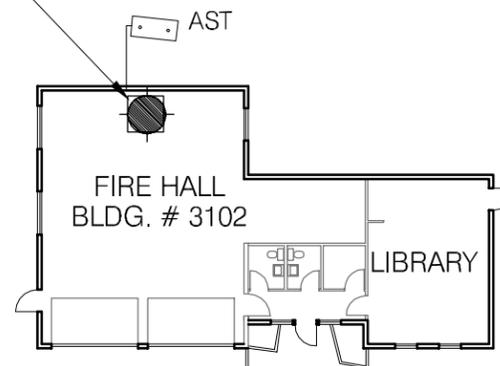
10.8.3 Priority 3

- It is assumed that the cost for ongoing monitoring would be included as routine sampling for ongoing water system operation.



○ SEPTIC TANK OR LEACH PIT
(NO FIELD LOCATED)

WELL 3102
N 6 916 938
E 506 369
DRILLERS REPORT
NO.: 111070012



NOTE:
50 m TO HIGHWAY



SCALE 1:300

NOTES:
1. UTM COORDINATES OBTAINED WITH A HAND HELD GPS USING NAD83 SYSTEM AND ARE CONSIDERED TO BE ACCURATE TO 10.0 m, APPROXIMATELY.

 30 m RADIUS FROM WATER WELL FOR CONSIDERATION OF PROXIMITY TO POTENTIAL CONTAMINANT SOURCES.

No.	DESCRIPTION	DATE	APPROVED
0	ISSUED FOR CLIENT REVIEW	DD/MM/YY	XXX
REVISION			

 **EBA Engineering Consultants Ltd.**

DESIGNED BY: R. MARTIN
DRAWN BY: J. BUYCK
DATE: AUG. 2005
SCALE: AS SHOWN
PROJECT No.: 1260002.003
ACAD FILENAME: 003--WESTERN REGION

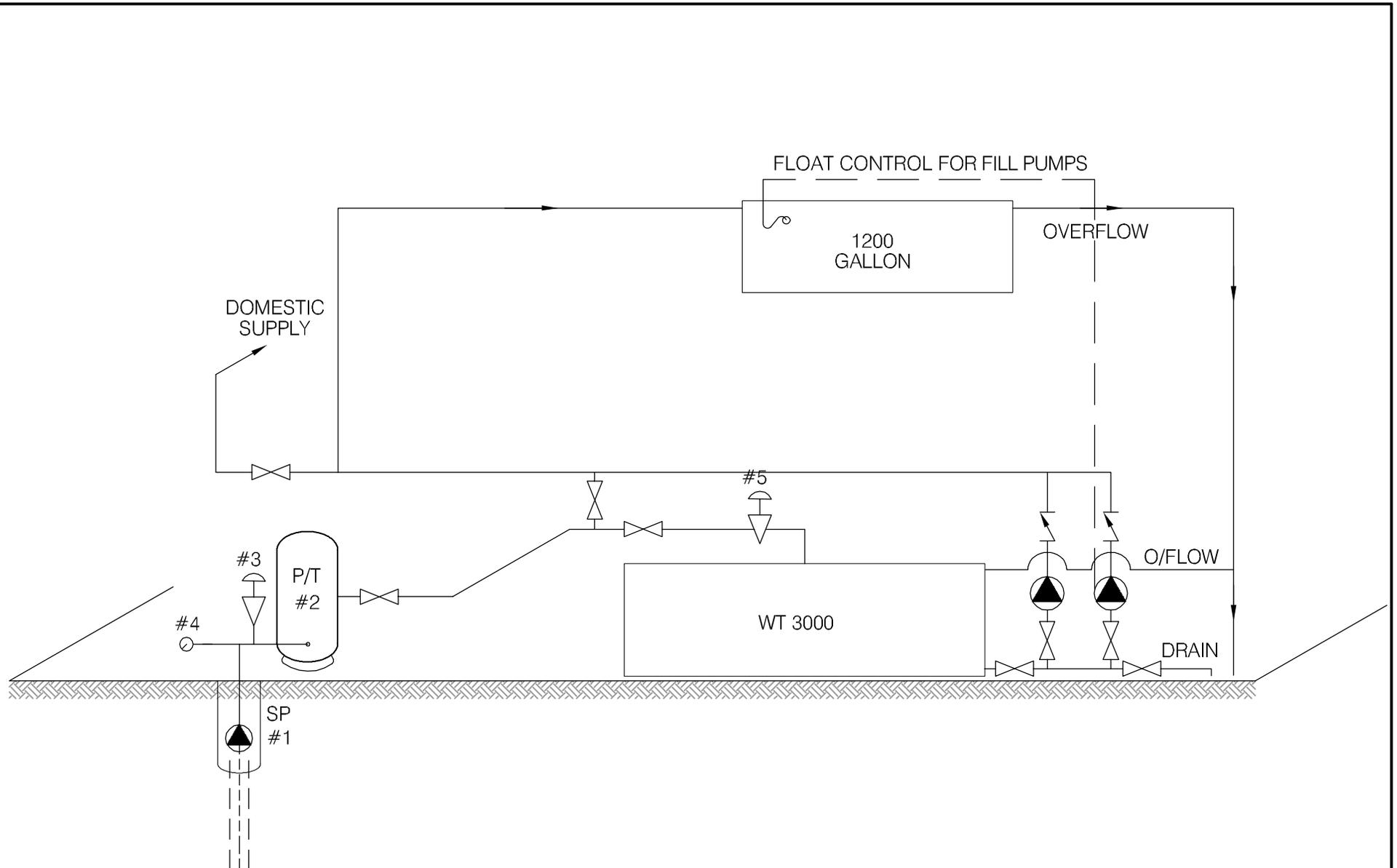
CLIENT:

Highways and Public Works
Property Management Branch

SMALL PUBLIC WATER SYSTEMS ASSESSMENT
WESTERN REGION

GOVERNMENT OF YUKON
HIGHWAYS & PUBLIC WORKS
BEAVER CREEK FIRE HALL
BUILDING # 3102
SITE LOCATION DIAGRAM
WELL ID: 3102

REVISION ISSUE
0
FIGURE No.
FIGURE 3102-A



SCHEMATIC PRODUCED BY BERT ALBISSER OF AQUA TECH SUPPLIES AND SERVICES LTD.

 EBA Engineering Consultants Ltd.	PROJECT SMALL PUBLIC WATER SYSTEMS ASSESSMENT WESTERN REGION			
CLIENT 	TITLE WATER SYSTEM DISTRIBUTION/TREATMENT SCHEMATIC SYSTEM ID.: 3102 BEAVER CREEK FIRE HALL			
DATE SEPT. 2005	DWN. JSB	CHKD. RMM	FILE NO. 1260002.003	DWG.: FIGURE 3102-B

Western Region – Beaver Creek Firehall
Building # 3102

DISTRIBUTION & TREATMENT SYSTEM DATA

Item	Description	Manufacturer	Model	Part No.	Serial No.	Size
1	Sub Pump	?	1/2 HP.			4" - 1/2 HP.
2	Pressure Tank	M. Y. G. S.	42 GALLON	GALVANIZED		TANK
3	Pressure Switch	SQUARE D	GSG-2	OLD	STYLE	
4	Pressure Gauge	MARSA	2" - 0 - 100 PSI			2" - 0 - 100 1/2" NPT
5	3000 GALLON FILL	ASCO	2" SOLENOID VALVE			
6	UPPER TANK FLOAT	SJE CONTROLS	PUMPMASTER LIP			2HP - 230V
7						
8						
9						
10						

TABLE 3102- 1: SUMMARY OF BACTERIOLOGICAL RESULTS

Building #	Building Name	Number of Sampling Events	Time Period over which Sampling was Done	Any Positive Total Coliform Results? (yes or no)	Fraction of Positive Total Coliform Results vs. Total Sampling Events	Any positive E.Coli results? (yes or no)	Most Recent Sampling Event Available for EBA Review	Is Most Recent Result Positive?
3102	Beaver Creek Fire Hall	8	Sept-04 to Jun-05	no	0/8	no	16-Jun-05	no



Table 3102-2: Water Quality Results

SOURCE:		Building 3102 - Beaver Creek Fire Hall			GCDWQ Criteria					
Location/ Resident Address		Beaver Creek								
Treatment		None								
Disinfection		None								
Source of Water		On-site well								
Purpose of Sampling		Base Line	Base Line	Additional Analytical						
Sample Location				washroom sink						
Date Sampled		Sep-28-05	15-Jun-05	28-Jul-05				Lower	Upper Limit	
Physical Tests (ALS)								AO	MAC	AO
Colour (CU)		5	<5.0	-						15
Conductivity (uS/cm)			401	-						
Total Dissolved Solids		214	227	-			500			
Hardness CaCO3		198	170	-	AO >200 = poor, > 500 unacceptable ^A					
pH		8.17	7.79	-	6.5		8.5			
Turbidity (NTU)		2.3	2.57	2.69		1	5			
UV Absorbance				0.0210						
% UV Transmittance				95.3						
Dissolved Anions (ALS)										
Alkalinity-Total CaCO3		179	196	-						
Chloride Cl		7.8	9.14	-			250			
Fluoride F		<0.05	0.061	-		1.5				
Silicate SiO4				-						
Sulphate SO4		21.5	21.3	-			500			
Nitrate Nitrogen N		0.1	<0.10	-		10				
Nitrite Nitrogen N		<0.05	<0.10	-		3.2				
Ammonia Nitrogen N				-						
Total Phosphate PO4				-						
Total Metals (ALS)										
Aluminum T-Al		<0.005	<0.010	-						
Antimony T-Sb		<0.0002	<0.00050	-		0.006				
Arsenic T-As		0.001	0.00097	-		0.025				
Barium T-Ba		0.041	0.038	-		1				
Boron T-B		0.019	<0.10	-		5				
Cadmium T-Cd		<0.00001	<0.00020	-		0.005				
Calcium T-Ca			52.2	-						
Chromium T-Cr		0.0006	<0.0020	-		0.05				
Copper T-Cu		0.804	0.748	-		1				
Iron T-Fe		0.16	0.142	-			0.3			
Lead T-Pb		0.0037	0.0065	-		0.01				
Magnesium T-Mg			9.54	-						
Manganese T-Mn		0.008	0.003	-			0.05			
Mercury T-Hg			<0.00020	-		0.001				
Potassium T-K			1.54	-						
Selenium T-Se			<0.0010	-		0.01				
Sodium T-Na			2.7	-			200			
Uranium T-U		<0.0005	0.00021	-		0.02				
Vanadium T-V				-						
Zinc T-Zn		0.192	0.153	-			5			
Organic Parameters										
Tannin and Lignin				0.20						
Total Organic Carbon C				0.98						
Extractable Hydrocarbons										
EPH10-19				<0.30						
EPH19-32				<1.0						
LEPH				-						
HEPH				-						
Field Chemistry (EBA)										
pH				8.04	6.5		8.5			
TDS (ppm)				200			500			
EC (uS/cm)				400						
Temperature (°C)				16.4						
Free Available Chlorine										

Notes:

A. Guidelines indicated for hardness are not CDWQG, rather they are general aesthetic guidelines - exceedences are indicated in yellow highlighting.

Italics and underline indicates exceedence of proposed MAC (ie. arsenic)

Bold with Yellow highlighting indicates exceedence of CDWQG Aesthetic Objective (AO)

Bold Underline with Yellow highlighting indicates exceedence of CDWQG MAC

Results are expressed as milligrams per litre except for pH and Colour (CU)

Conductivity (umhos/cm), Temperature (°C) and Turbidity (NTU)

< = Less than the detection limit indicated.

AO = Aesthetic Objective

MAC = Maximum Acceptable Concentration (Health Based)



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SMALL PUBLIC WATER SYSTEM ASSESSMENT

PART A: EBA Site Inspection

Inspector: Ryan Martin, Luke Lebel

Date July 28, 2005

WELL ID #	Owner	Location Description
3102	YTC	Beaver Creek Fire Hall

1. Well Location and Potential Contaminant Sources

a. General location of well: (Community, Subdivision, etc.)

Beaver Creek

b. Specific location: (Road or street, Building number, name of owner and/, legal description,

c. GPS location: N 6916938 E 506369 elv 668m ± 11m

d. Is there electric power? Yes No

e. Is there outside water access? Yes No

f. Does the well system have:

15 or more service connections to a piped distribution system? If so how many _____

Beaver Creek Fire Hall and Public Library

5 or more delivery sites on a trucked distribution system? If so how many _____

g. Nearest building, specify Located inside fire hall

h. Distance from well to building _____

i. If there is an effluent disposal field, is its location known? Yes No

j. Distance from well to nearest point of known field: Septic tank or leach pit @ 16m

k. Well location relative to field: upslope downslope lateral

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l. Is there any part of a sewage disposal system(s) or other potential sources of pollution that may pose a health and safety risk within 30 m? Yes No

Neighbouring septic field @ 47m

m. Is the well located within 300 m from a sewage lagoon or pit? Yes No unlikely

n. Is the well located within 120 m from a solid waste site or dump, cemetery? Yes No unlikely

o. Is the infrastructure protecting the wellhead, pumphouse, storage tank and/or water treatment plant designed and secured to prevent:

Unauthorized access by humans? Yes No
In locked & alarmed building

Entrance by animals? Yes No
No cap ~ 4cm above grade

p. Is well site subject to flooding? Yes No

q. Is the well site well drained? Yes No

r. Is there a buried fuel tank on the property? Yes No

If yes, is it in use abandoned

Is the location known? Yes No

Distance from the well to known buried tank _____

s. Are there any other known contaminant sources on the property?

Yes No Describe _____

If yes, specify the source: dump sewage lagoon cemetery other

Potential Source 1: AST; Distance from well to Potential Source 1: ~3.5m

Potential Source 2: Out house; Distance from well to Potential Source 2: ~3.1m

Potential Source 3: _____; Distance from well to Potential Source 3: _____

Potential Source 4: _____; Distance from well to Potential Source 4: _____

t. Are there other wells on this property? Yes No

How many? _____ in use abandoned require proper sealing

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2. Well and Wellhead information:

- a. When was well installed? Year unknown Month _____
- b. Type: drilled dug sand point other _____
- c. Is there a drillers log for the well: Yes No
- d. Is there a surface seal to 6 m Yes No unknown unlikely
- e. Surface casing: Yes Diameter _____ No
- f. Well casing: Diameter 15 cm Material: steel plastic concrete
- g. Depth of well: 34.03 m^{bg} measured (if possible) reported from log
- h. Static water level below ground: 13.06 m below grade
 measured (if possible) reported from log flowing
- i. (If granular) Is the well completed: open end casing with a well screen
 with slotted pipe unknown other unknown
- j. (If bedrock) Does the well have a liner? yes No steel plastic
- k. If there is a well screen: length unknown slot size(s) _____
Location of screen: from _____ to _____ from log reported
- l. Is there a sump below the screen? Yes No unknown
- m. Is the well head: in pumphouse in pit pitless adaptor in a building
 in a wooden enclosure other, describe _____
- n. If the well head is located in a wooden enclosure,

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- i. Is the well head below grade? describe in detail ~40 mm above grade
- ii. Are there signs of ponding on the enclosure(e.g. water stains, etc.)? Yes No
- iii. Is the wellhead enclosed by fiberglass insulations? Yes No
- iv. Any evidence of rodents? Specify Access possible
- v. Does the well casing have a proper seal cap? Yes No
If no, describe condition Cloth forced in casing

3. Water Supplying This Well:

- a. By definition is the water from a surface water source or under the direct influence of surface water?
 Yes No farther investigation required.
If yes is there treatment or disinfection Yes No
Explain (filtration, disinfection etc...) _____

4. Aquifer Supplying This Well:

- a. The aquifer is: bedrock granular sediment unknown
likely
- b. Does water level and/or well capacity show seasonal fluctuation? Yes No
unlikely

5. Pump Installation:

- a. Is the well equipped with a pump? yes No
- b. Type of pump: hand electric submersible jet
 shallow well centrifugal other, _____
- c. Description: Manufacturer _____ Model _____
horsepower _____ capacity _____ voltage _____

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- d. Date installed: _____ By: _____
- e. For submersible pump, depth of setting below surface _____
- f. Drop pipe for submersible pump: steel plastic
- g. Pump delivers water to: pressure tank elevated tank other
- h. Are there automatic pump controls: Yes No
- i. Is there provision for taking water samples before water reaches storage? Yes No
- j. Is there a water meter on the system? Yes No
- k. Is the pump and piping protected from freezing? Yes No
If yes, describe: Inside heated building
- l. Comments on pump installation: _____

6. Conclusions

a. Comments on overall installation:

b. Recommendations:

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PART B: EBA Site Inspection

Inspector: BERT ALBISSER

Date July 28/05

WELL ID #	Owner	Location Description
3102	YTG	B.C FIRE HALL

6. Water Treatment

a. Is well water treated? Yes No; Type of treatment:

chlorination iron and or manganese removal other _____

b. Is water entering plumbing or piped distribution system treated with chlorine or another treatment that is as effective as chlorine used to achieve disinfection throughout the system?

Yes No If so how _____

c. If treated with chlorine, is the free residual chlorine concentration less than 0.2 mg/L

Yes No _____ reading.

Tested at _____ (location)

d. Is testing for chlorine residual concentration done at the tap (eg. Kitchen faucet) or from representative points in a piped distribution system, including a point from tap at the end line

Yes No If yes how often? _____

e. If the drinking water is being transported by water delivery truck does it have a minimum chlorine free residual of 0.4 mg/L at the time of fill. Yes No

7. Water Quality (observations):

a. Does the water stain plumbing? yes No slight severe

Type of stain: brown red black

b. Does the water contain sediment? Yes No occasional constant

c. Is there an unpleasant odour? Yes No H₂S Other _____

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- d. Is there an unpleasant taste? Yes No brackish Other _____
- e. Is there a history of bad bacterial analyses? ? Yes No
- f. Is there a chemical analysis? ? Yes No adequate incomplete
- g. Is there analysis of trihalomethanes (THMs) where the water source is a surface water supply or a well under the direct influence of surface water? Yes No
- h. Is the drinking water tested daily with an accurate reading chlorine test kit capable of reading in the range 0 to 3.5 mg/L of free chlorine residual in increments of 0.1mg/L? Yes No unknown
- i. If yes is the test performed in accordance with manufactures directions? Yes No unknown
- j. Is a record of the date, time, name of person performing the test and results of the drinking water sample kept? Yes No

TANK AND PIPING DETAILS

Tank Room

Is there a water tank? Yes No Details: PRESSURE TANK

Where is it located?

Comments: FIRE HALL

Is the room in which the water tank is located heated to maintain an optimum temperature of 4°C for stored water?

YES NO

Comments: _____

Are there windows in the add-on that may allow direct sunlight onto the water holding tank? YES

NO

Comments: _____

Are there other heat sources near the tank? YES NO

Comments: _____

Is there waterproof flooring with a sealed base to contain spills? YES NO

Comments: _____

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Overall Tank

What are the tank size and dimensions?

What material is the tank constructed of? _____

Is tank and associated piping constructed of safe materials (i.e. CSA approved and material that does not affect the taste of the water)? YES NO

Comments: _____

Tank Inlet, Outlet and Lid

Is there adequate access on the tank for cleaning (i.e. min 15" access lid)? YES NO

Does the lid have a tight seal and is it watertight when closed? YES NO

Does the tank have an overflow or high level whistle? YES NO

Is the water tank drain accessible? YES NO

WATER TANK AND WATER QUALITY CONDITION

Are there signs of staining or biofouling? YES NO

Comments: _____

Is there any sediment or scum in bottom of tank? YES NO

Comments: _____

Is there any odour associated with the water or tank? YES NO

Have there been any bacteriological analyses conducted previously? YES NO

Does the tank appear that it has been cleaned recently? YES NO

Are the tanks easily assessed for the purpose of cleaning and disinfection? YES NO

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8. Conclusions

a. Comments on overall installation:

THIS INSTALLATION DOES NOT MEET CODE.
NO SANITARY WELL SEAL
CASING CUT AT GROUND LEVEL.

b. Recommendations:

SHOCK CHLORINATE WELL & WATER SYSTEM
INCLUDING ALL TANKS. INSTALL PUMP
SYSTEM TO CODE.
INSTALL PROPORTIONAL CHLORINATOR TO FEED
ALL SOURCES.



Photo 0574: 3102 Beaver Creek Fire Hall looking west



Photo 0575: 3102 Above ground fuel storage tank behind firehall



Photo 0104: 3102 Wellhead (bottom), pressure tank (top). Note well casing is covered with a piece of cloth

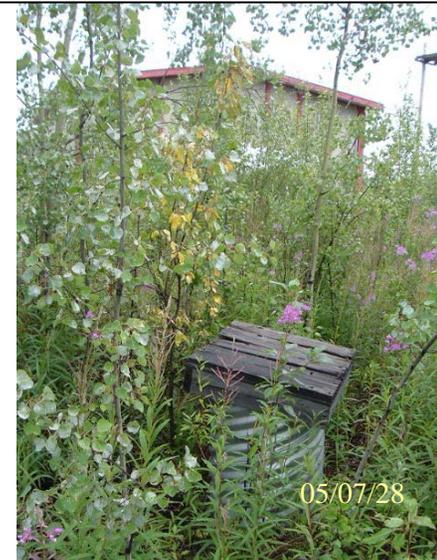


Photo 0576: 3102 Looking east at septic tank or leach pit (front), fire hall (rear)



Photo 0106: 3102 Water storage tank



Photo 0111: 3102 Elevated water storage tank